

1. A self-ligating orthodontic bracket for coupling an archwire with a tooth, comprising:
  - a bracket body configured to be mounted to a tooth, said bracket body including an archwire slot;
  - 5 a ligating slide carried by said bracket body for movement between an open position in which an archwire is insertable into said archwire slot and a closed position in which said ligating slide retains the archwire in said archwire slot, said ligating slide including a recess; and
  - a resilient engagement member positioned to engage said recess when
  - 10 said ligating slide is in said closed position for constraining movement of said ligating slide relative to said bracket body.

2. The self-ligating orthodontic bracket of claim 1 wherein said ligating slide includes a groove with a closed end, said resilient engagement member moving within said groove as said ligating slide is moved between said open and closed positions such that said resilient engagement member engages said closed end  
5 when said ligating slide is in said open position.
3. The self-ligating orthodontic bracket of claim 1 wherein said resilient engagement member comprises a spring arm coupled with said bracket body and having a free end carrying a detent.
4. The self-ligating orthodontic bracket of claim 1 wherein said resilient engagement member comprises a pin configured to be received within said aperture in said ligating slide and a coil spring biasing said pin toward said ligating slide.
5. The self-ligating orthodontic bracket of claim 1 wherein said resilient engagement member provides positive stops for said ligating slide in said open and closed positions without overcoming a biasing force of said resilient engagement member during transitions between said open and closed  
5 positions.
6. The self-ligating orthodontic bracket of claim 1 wherein said resilient engagement member locks said ligating slide in said open and closed positions independent of a biasing force of said resilient engagement member.

7. The self-ligating orthodontic bracket of claim 1 wherein said recess is a throughhole extending through said ligating slide and said spring arm includes a detent that engages said throughhole when said ligating slide is in said open position.

8. A self-ligating orthodontic bracket for coupling an archwire with a tooth, comprising:
- a ligating slide;
  - a bracket body configured to be mounted to a tooth, said bracket body
- 5 including an archwire slot and a pair of opposed guides supporting said ligating slide, said pair of opposed guides guiding said ligating slide for movement between an open position in which an archwire is insertable into said archwire slot and a closed position in which the archwire is retained in said archwire slot, at least one of said pair of opposed guides including a recess; and
- 10 a resilient engagement member positioned to engage said recess when said ligating slide is in said closed position for constraining movement of said ligating slide relative to said bracket body.

9. The self-ligating orthodontic bracket of claim 8 wherein said resilient engagement member comprises a bendable wire having a first end engaging said recess in said closed position and a second end affixed to said ligating slide, said bendable wire being movable by a force sufficient to remove said first end from said recess in order to release said ligating slide for movement from said closed position to said open position.

10. The self-ligating orthodontic bracket of claim 9 wherein said ligating slide includes a throughhole positioned for accessing said bendable wire to cause movement.

11. The self-ligating orthodontic bracket of claim 9 wherein first end of said bendable wire is capable of reengaging said recess when said force is removed.

12. An apparatus for coupling an archwire with a tooth, comprising:
- a bracket body configured to be mounted to a tooth, said bracket body including an archwire slot;
  - a ligating slide carried by said bracket body for movement between an open position in which an archwire is insertable into said archwire slot and a closed position in which said ligating slide retains the archwire in said archwire slot, said ligating slide including a rear surface facing the tooth, a front surface opposite to said rear surface, and an aperture extending from said front surface to said rear surface;
  - a resilient engagement member capable of engaging said ligating slide in said closed position for constraining movement of said ligating slide relative to said bracket body; and
  - a tool including a shoulder and a tip projecting from said shoulder by a distance sufficient to deflect said resilient engagement member so that said ligating slide may be moved from said closed position to said open position when said shoulder contacts a portion of said ligating slide surrounding said aperture.

13. The apparatus of claim 12 wherein said distance is greater than or equal to a thickness of said ligating slide between said front surface and said rear surface.

14. The apparatus of claim 13 wherein said distance is insufficient to apply a stress exceeding the elastic limit of the resilient engagement member.

15. The apparatus of claim 12 wherein said resilient engagement member protrudes into said aperture for constraining movement of said ligating slide relative to said bracket body.

16. A self-ligating orthodontic bracket for coupling an archwire with a tooth in conjunction with a tool, comprising:

a bracket body configured to be mounted to a tooth, said bracket body including an archwire slot; and

5 a ligating slide carried by said bracket body for movement between an open position in which an archwire is insertable into said archwire slot and a closed position in which said ligating slide retains the archwire in said archwire slot, said ligating slide including a rear surface facing the tooth, a front surface opposite to said rear surface, and a tool-engaging element accessible from said  
10 front surface, said front surface including a channel effective for guiding the movement of a tool contacting said front surface and moving toward said tool engaging element.



17. The self-ligating orthodontic bracket of claim 16 wherein said exposed channel is tapered.

18. The self-ligating orthodontic bracket of claim 17 wherein said exposed channel converges toward said aperture.

19. The self-ligating orthodontic bracket of claim 16 wherein said tool-engaging element is an throughhole extending from said front surface to said rear surface.

20. The self-ligating orthodontic bracket of claim 19 further comprising:

a resilient engagement member positioned to engage said aperture when said ligating slide is in said closed position for constraining movement of said ligating slide relative to said bracket body, said resilient engagement member capable of being removed from said aperture by a force applied by the spring release tool so that said ligating slide may be moved from said closed position to said open position.

21. A self-ligating orthodontic bracket for coupling an archwire with a tooth, comprising:

a bracket body configured to be mounted to a tooth, said bracket body including an archwire slot;

5 a ligating slide carried by said bracket body for movement between an open position in which an archwire is insertable into said archwire slot and a closed position in which said ligating slide retains the archwire in said archwire slot, said ligating slide including a peripheral edge; and

10 a deflecting element on said bracket body that deflects objects in a patient's oral cavity away from said peripheral edge when said ligating slide is in said closed position and said bracket body is mounted to the tooth.

23. The self-ligating orthodontic bracket of claim 22 wherein said peripheral edge has a length, and said deflecting element comprises a continuous ridge overlying said peripheral edge along said length.

24. The self-ligating orthodontic bracket of claim 22 wherein said deflecting element is a smoothly-curving ridge.

25. A self-ligating orthodontic bracket for coupling an archwire with a tooth, comprising:

a bracket body configured to be mounted to a tooth, said bracket body including an archwire slot and a first stop element;

5 a ligating slide carried by said bracket body for movement between an open position in which an archwire is insertable into said archwire slot and a closed position in which said ligating slide retains the archwire in said archwire slot, said ligating slide including at least one second stop element that abuts said first stop element when said ligating slide is in said open position.

26. The self-ligating orthodontic bracket of claim 25 wherein said bracket body includes a guide that captivates said ligating slide for sliding movement relative to said bracket body, said second stop element positioned on said guide.

27. The self-ligating orthodontic bracket of claim 25 wherein said ligating slide includes an aperture, and further comprising:

a resilient engagement member including a detent positioned to engage said aperture when said ligating slide is in said closed position for constraining  
5 movement of said ligating slide relative to said bracket body.

28. The self-ligating orthodontic bracket of claim 25 wherein said resilient engagement member contacts said ligating slide in at least said open position with a force sufficient to maintain said ligating slide in said open position.

29. A self-ligating orthodontic bracket for coupling an archwire with a tooth, comprising:

a metallic self-ligating assembly including an archwire slot and a ligating member movable between an open position in which an archwire is insertable into said archwire slot and a closed position in which the archwire is retained in said archwire slot; and

a bracket body configured to be mounted to a tooth and carrying said metallic self-ligating assembly, said bracket body comprising a non-metallic material.

30. The self-ligating orthodontic bracket of claim 29 wherein said non-metallic material is a polymer, a filled polymer composite, or a ceramic.

31. The self-ligating orthodontic bracket of claim 29 wherein said non-metallic material is sapphire, polycrystalline aluminum oxide, toughened zirconia, or yttrium-stabilized zirconia.

32. The self-ligating orthodontic bracket of claim 29 wherein said non-metallic material is polycarbonate, an acrylic-based thermoplastic resin, or an acrylic thermoset resin.

33. The self-ligating orthodontic bracket of claim 29 wherein at least one of said walls of said self-ligating insert is wedge-shaped for increasing pull-out resistance in direction generally perpendicular to the tooth.

34. The self-ligating orthodontic bracket of claim 29 further comprising a metallic engagement member capable of constraining movement of said ligating member relative to said bracket body when said ligating member is in the closed position.

35. The self-ligating orthodontic bracket of claim 29 wherein said self-ligating assembly further includes at least one guide and said ligating member is slidably movable within said at least one guide.